



Crime Mapping Research Center Annual Report

1997

February 18, 1998

OVERVIEW OF THE CENTER

Over the last decade, the criminal justice community has begun to reap the valuable analytic benefits of geographic information system (GIS) technology. This powerful technology enhances the ability of researchers and practitioners to identify hot spots and analyze complex spatial patterns of crime and criminal behavior.

In February, 1997, the National Institute of Justice (NIJ) established the Crime Mapping Research Center (CMRC). The goal of the Center is to promote research, evaluation, development and dissemination of the use of GIS technology for crime analysis and criminal justice research.

NIJ established the Crime Mapping Research Center with funds available under the technology assistance provisions of the 1996 Omnibus Appropriations Act amending the 1994 Crime Act. The CMRC represents a partnership between NIJ's Office of Research and Evaluation and Office of Science and Technology.

CMRC MISSION

The Crime Mapping Research Center promotes the research and development of computerized crime mapping through:

- **Research** including fellowships, intramural activities, and NIJ-funded grant awards.
- **Evaluation** of best practices, GIS use in police departments, and current criminal justice applications.
- **Development** of training programs, a national geocoded data archive, and new analytic software.
- **Dissemination** of information and research through conferences, workshops, a Web Site, and a listserv.

Through these actions, the Crime Mapping Research Center serves as a clearinghouse for crime mapping research and development in the United States.

RESEARCH

EXTRAMURAL

NIJ awarded four new grants pertaining specifically to crime mapping in 1997, all of which are monitored by CRMC staff:

Demonstration of Orthophotographic Representation and Analysis

Grant no 97-LB-VX-K004

University of Maryland-Baltimore County

Keith Harries

\$ 144,701

Grant Monitor: Seth Flanders

Crime Analysis Extension Application

Grant no. 97-IJ-CX-0042

Environmental Systems Research Institute

Lee Hunt, Principal Investigator

\$ 519,892

Grant Monitor: Seth Flanders

The Identification, Development and Implementation of Innovative Crime Mapping Techniques and Spatial Analysis

Grant no. 7-9797-NY-IJ

Hunter College of the City University of New York

Victor Goldsmith, Principal Investigator

\$249,930

Grant monitor: Nancy La Vigne

Demonstrating the Analytical Utility of GIS for Policing: Moving Beyond the Descriptive

Grant no. 97-LB-VX-K010

Southern Illinois University at Carbondale

James LeBeau, Principal Investigator

\$200,378

Grant monitor: Cynthia Nahabedian

CMRC FELLOWSHIP PROGRAM

The Crime Mapping Research Center Visiting Fellowship Program supports research and development of topics in the area of crime mapping and the spatial analysis of crime. This program offers practitioners and researchers an opportunity to undertake independent research in a unique area of study. Visiting Fellows study topics of mutual interest to the Fellow and the CMRC while in residence at NIJ for 3 to 18 months.

CMRC welcomed its first fellow, Professor James LeBeau from Southern Illinois University at Carbondale, for a three-month visit in the summer of 1997. While on site, Dr. LeBeau trained CMRC staff in the basics of cartography and spatial analysis, and collaborated on intramural research projects.

INTRAMURAL RESEARCH PROJECTS

CMRC staff initiated and conducted intramural research on the following topics:

Assessing the Mobility of DUF Arrestees: An Import/Export Analysis

This project analyzes zip codes of residences and arrest locations of offenders sampled under the Drug Use Forecasting (DUF) program in Atlanta, Georgia. Data are analyzed to determine the extent to which certain Atlanta communities serve as “import” or “export” areas for offenders. Using a Geographic Information System (GIS), import and export patterns are examined by crime type.

Temporal Aggregation

Using a data set of homicides in Washington, DC, over a three-year period, this project tests the inferential effects of aggregation on the analysis of homicide patterns. Specifically, this paper explores various temporal grouping methods and areal unit sizes with regard to whether they mask or distort the identification of crime hot spots.

Crime Mapping Survey of Law Enforcement Agencies

This survey will collect information about the use of computerized crime mapping within police departments, both in terms of hardware and software resources as well as the types of maps produced and how they are used. [See detailed description under “Evaluation” below].

Hot Spot Project

This project represents a systematic comparison of hot spot identification tools found in several software packages. Each participant is provided with the same data set, base maps, and search areas, and will apply a different tool to assess its: (1) accuracy; (2) consistency; (3) face validity; (4) utility for statistical analyses; and (5) “user friendliness.”

CMRC staff presented academic papers pertaining to crime mapping at the following five conferences:

Annual Conference of the American Society of Criminology, "The Effects of Spatial and Temporal Aggregation on the Analysis of Patterns of Homicide," San Diego, CA, November 22, 1997, La Vigne and Flanders

Sixth International Seminar on Environmental Criminology and Crime Analysis, "How Hot is That Spot?: The Utility and Application of Place-Based Theories of Crime," Oslo, Norway, June 25, 1997, La Vigne.

Seminar on Mapping and Analysis of Geographically-Referenced Crime Data, Sponsored by the University of Liverpool and the Safer Merseyside Project, "Crime Mapping Initiatives in the United States: An Overview of Recent Efforts and Future Initiatives," Liverpool, England, September 4, 1997, La Vigne.

Annual Conference of the Drug Use Forecasting/Arrestee Drug Abuse Monitoring System, "Assessing the Mobility of DUF Arrestees: An Import/Export Analysis," Denver, CO, May 8, 1997, La Vigne.

Decision Sciences Institute Annual Meeting, "Spatial Analysis of Crime and Offender Movement Patterns," San Diego, CA, November 23, 1997, Flanders.

EVALUATION

The CMRC's major evaluation effort of 1997 was the administration of its national survey of law enforcement agencies to determine the extent to which they use analytic mapping. The survey results will guide the CMRC in the development of training and assistance programs. The questionnaire was developed to determine the level of crime mapping within departments, both in terms of hardware and software resources, the types of maps that are produced and how they are used, and the agency's needs in terms of equipment, technical assistance, and training.

A total of 2,700 surveys were mailed to a randomly select sample of law enforcement agencies. All agencies with more than 100 sworn officers were sampled, plus a stratified sample of those with less than 100, based on agency type (20% sheriffs departments and 10% of county, municipal, and special police force).

To date, the survey response rate is **71 percent**. A final report is expected in April, 1998.

DEVELOPMENT

Given that this was the CMRC's first year of existence, most of its development efforts were internal to the Center, focused on increasing CMRC staff skills and knowledge pertaining to GIS and the spatial analysis of crime.

CMRC staff participated in the following formal training:

- Arview GIS Spatial Analyst - La Vigne, Flanders, and Jefferis
- ARC/INFO - Flanders
- Introduction to Avenue - Flanders
- Intermediate Avenue - Szakas

DISSEMINATION

Much of the CMRC's work this first year entailed spreading the word that the Center exists and that it represents a valuable resource to those interested in crime mapping. This was achieved through a variety of mechanisms including: formal presentations; attendance at meetings; and the establishment of a monograph series, Web page, and listserv.

PRESENTATIONS AND ATTENDANCE AT CONFERENCES & MEETINGS

“Word of mouth” dissemination was achieved through CMRC staff presentations and attendance at the following 30 meetings:

- ❖ 7th Annual Problem-Oriented Police Conference sponsored by the Police Executive Research Forum, workshop on “The Use of GIS for Problem-Oriented Policing (with Carl Walter, Charlotte-Mecklenburg PD, and Pat Drummy, San Diego PD)”, San Diego, CA, November 18, 1997, La Vigne.
- ❖ Annual Meeting of the Academy of Criminal Justice Sciences, presentation on “The Use of GIS in Criminal Justice Research and Practice,” Louisville, KY, March 13, 1997, La Vigne.
- ❖ Annual Conference of the Association of Public Policy Analysis and Management, presentation entitled “Crime Mapping for Policymaking”, Washington, DC, November 6, 1997, La Vigne.
- ❖ Annual Meeting of the International Association of Crime Analysts, workshop entitled “The National Institute of Justice Crime Mapping Research Center (overview and focus group),” Milwaukee, WI, September 18, 1997, La Vigne.
- ❖ Office of Justice Programs Bureau Heads Meeting, National Institute of Justice Crime Mapping Research Center (overview), Washington, DC, March 18, 1997, La Vigne.

- ❖ National Conference on Crime Prevention, workshop on “The Use of GIS for Community Crime Prevention,” presentation entitled “How to Get Started with GIS for Crime Mapping,” Washington, DC, October 13, 1997, La Vigne.

- ❖ How Information Technology Can Help Fight Crime Conference, workshop on "Information

Technology Platforms and Applications- GIS Mapping on-site session" and presentation on the Crime Mapping Research Center for panel entitled "DOJ's Next Steps in Information Technology," Oakland, California, September 6-9, 1997, Nahabedian.

In 1997 alone, the CMRC staff:

- Took on 4 new mapping-related extramural grants and 1 fellowship;
- Initiated 4 new intramural research projects;
- Presented 5 papers at academic conferences;
- Made 17 presentations at conferences and meetings; and
- Participated—as chairs, discussants, or attendees—in 18 other panels, workshops, or conferences

- ❖ Faculty GIS workshop at the Howard University School of Continuing Education, demonstration on “The Use of GIS for Crime Analysis” and overview of the CMRC, Silver Spring, MD, July 31, 1997, Nahabedian and LeBeau.
- ❖ Presentation to Assistant Attorney General Laurie Robinson, Overview of the CMRC, Washington, DC, January 22, 1997, La Vigne.
- ❖ Presentation to the Baltimore-Washington HIDTA GIS Working Group, Overview of CMRC, Greenbelt, MD, March 3, 1997, La Vigne.
- ❖ Presentation to staff of the White House Domestic Policy Council, Overview of CMRC and criminal justice applications of GIS, Washington, DC, March 28, 1997, La Vigne, with Lattimore, DeVoe, and Canter.
- ❖ Meeting the Challenges of Crime and Justice: The Annual Conference on Criminal Justice Research and Evaluation, Overview of CMRC, Washington, DC, July 21, 1997, La Vigne.
- ❖ Chair, panel entitled “Space, Time, and Crime: New Developments in the Use of Analytic Mapping for Research and Practice,” Annual Conference of the American Society of Criminology, San Diego, CA, November 22, 1997, La Vigne.

- ❖ NIJ Annual Conference on Criminal Justice Research and Evaluation, panel entitled “Computerized Crime Mapping” Washington, DC, July 21, 1997, Flanders, chair.
- ❖ Academy of Criminal Justice Sciences, presentation on “The Use of GIS in Criminal Justice Research and Practice,” Louisville, KY, March 13, 1997, La Vigne, chair.
- ❖ NIJ Annual Conference on Criminal Justice Research and Evaluation Research, Action Roundtable on the Crime Mapping Research Center, , Washington, DC, July 23, 1997, LeBeau and La Vigne.
- ❖ Annual Conference of the Association of Public Policy Analysis and Management, panel entitled “GIS and Computerized Crime Mapping for Police and Prosecution,” Washington, DC, November 6, 1997, La Vigne, chair.
- ❖ Center for the Applied Studies of the Environment Spatial Crime Analysis Meeting, presented closing remarks, New York, NY, February 28 - March 1, 1997, La Vigne.
- ❖ Annual Conference of the American Society of Criminology, Crime Mapping Research Center Informational Brown Bag Lunch, San Diego, CA, November 21, 1997, CMRC staff.
- ❖ BJS/JRSA conference, Electronic Poster Session, Miami Beach, FL, September, 1997, Jefferis.
- ❖ BJA Rural Criminal Justice Law Enforcement Forum, Electronic Poster Session, Nashville, Tennessee, July 2, 1997, La Vigne.
- ❖ New York Police Department COMPSTAT Conference, New York, NY, May 12-14, 1997, La Vigne, attendee.
- ❖ Centers for Disease Control Public Health Conference, Washington, DC, July 29, 1997, Jefferis and Sadler, attendees.
- ❖ Towson State University GIS Conference, May 27-29, 1997, Flanders, attendee.
- ❖ CMRC Open House, February 13, 1997 - with guest presenters Phil Canter and John DeVoe.
- ❖ Meeting with Chief of Police Larry Solsby regarding proposed Criminal Division/NIJ assistance for implementing GIS in the Metropolitan Police Department, Washington, DC, June 3, 1997, La Vigne.

- ❖ Meeting of the Regional Crime Analysis Geographic Information Systems Consortium, Baltimore County Police Department, Tolson, Maryland, June 11, 1997, La Vigne.
- ❖ Meeting with Gloria Laycock and Barry Webb of the Police Research Group, Home Office, and Pat Mayhew, Research and Statistics Directorate, Home Office, September 2, 1997.

CMRC MONOGRAPH SERIES

Since the establishment of the Crime Mapping Research Center, CMRC staff have been inundated with calls from crime analysts, law enforcement officers, researchers, and others in the criminal justice field asking for information in the form of publications on how to establish a GIS, how to make maps for crime analysis purposes, and related questions.

Given the demand for materials on the subject, in late 1997, CMRC launched its Crime Mapping Monograph Series by commissioning crime analyst Mark Stallo of the Dallas Police Department to draft “How to Get Started with GIS for Crime Mapping.” The monograph is expected to go to press in late March, 1998, and future monographs that address related topics are in progress.

CMRC WEB SITE

In July, 1997, the CMRC established its Web Site at www.nlectc.org/cmrc. The Web Site serves as an international clearinghouse for information and development in the area of crime mapping and spatial analysis. It includes a list of CMRC staff, NIJ-funded grants that pertain to crime mapping, descriptions of upcoming conferences, and descriptions of the CMRC’s current initiatives.

CMRC LISTSERV

One of the more innovative information dissemination tools available through the CMRC is a listserv called “[Crimemap](#).” [Crimemap](#) is available to those

Quotes from Crime Mapping Symposium attendees:

"The Denver mapping conference was the best run, most informative conference that I have yet attended." - Hal Holzman, HUD

"... I would like to thank you, your staff, and those who worked so hard behind the scenes to make the crime mapping symposium in Denver, Colorado, a great success."
- Captain Darry D. Perry, Honolulu Police Department

"Congratulations on a terrific conference in Denver! I returned to work fairly overflowing with new ideas and enthusiasm." - Richard Gross, Center City District, Philadelphia, PA.

"The Crime Mapping Conference was excellent! I was able to bring back several key bits of information that we are going to implement here in Scottsdale." - Paul C. Bentley, Crime Analyst, Scottsdale Police Department.

".. our representative to the conference said it was terrific! He is looking forward to attending next year. Thanks for addressing this important topic and best of luck with future conferences." - Rick Smith, Arlington, Texas Police Department.

"...we owe you thanks for creating this wonderful forum for discussion and exchange. The best NIJ conference ever, in my opinion!" - John Eck, Associate Professor, University of Maryland-College Park.

interested in discussions about computerized mapping technologies related to criminal justice applications. It operates via the internet as an electronic bulletin board, enabling participants to post and respond to questions that all subscribers receive. At last count, Crimemap has a total of 497 subscribers representing crime analysts, geographers, researchers, and criminal justice practitioners from all over the United States, as well as from Canada, Great Britain, France, The Netherlands, Australia, South Africa, and elsewhere.

CMRC-HOSTED MEETINGS & CONFERENCES

Crime Mapping Strategic Planning Meeting, Washington, DC, Feb 3-4, 1997.

This meeting marked the establishment of the Crime Mapping Research Center and served to guide NIJ in the development of the Center's programs and initiatives. Thirty-five experts in the field, representing criminal justice researchers, practitioners, crime analysts, and geographers, convened to discuss recent trends and current needs in spatial crime analysis and computerized crime mapping.

Exploring the Future of Crime Mapping: National Symposium on the Use of GIS in Criminal Justice Research and Practice, October 5-7, 1997, Denver, CO.

The purpose of this national conference was to disseminate the latest technologies in crime mapping research and practice through:

- Workshops on GIS, cartography, and spatial and temporal analyses, from introductory to advanced;
- Plenary sessions, featuring best practices of law enforcement agencies that have designed their own front-end systems; and

- Panels on the use of GIS in community policing, forging partnerships between agencies and universities, crime mapping for police managers, and GIS for other criminal justice applications.

This three-day conference offered over 20 plenary sessions, panels, and workshops. More than 40 leading experts, including police managers, crime analysts, geographers, and criminal justice researchers, were featured as presenters. The conference was a great success, drawing 400 attendees, with **91 percent** of those indicating that they plan to attend next year.

Hot Spot Meeting, Washington, DC, September 25, 1997.

The CMRC convened this meeting to begin a dialogue on the issue of crime hot spot analysis. Participants established the questions that need to be answered, began to identify the limitations of current methods, and brainstormed about new methods of analysis. The result of the meeting was an agreement among participants to continue the dialogue, to collaborate on an effort to test all known methods, and to develop a list of needs and requirements for hot spot analysis methods.

OTHER DISSEMINATION VEHICLES

During its first year, the CMRC also produced two brochures: one on the Center and a second on the CMRC fellowship program. Staff also compiled and produced the Crime Mapping Briefing Book, which provides examples of various uses of mapping for crime analysis and criminal justice purposes. The briefing book is available both in hard copy and on the CMRC Web Site.

CMRC STAFF

CMRC STAFF AND FELLOWS, 1997		
NIJ Staff		
Nancy La Vigne		100%
Cynthia Nahabedian		50%
Seth Flanders		50%
Eric Jefferis		50% 5 months
Joseph Szakas (contractor)		100% 2 months
Janet Stamatel (off-site contractor)		50% 2 months
Fellowships		
James LeBeau		100% 3 months
Interns		
Eric Kovandzic		50% 3 months
Dan Sadler		50% 5 months
Maureen O'Connell		50% 1 month